# NEW SPECIES OF CHRYSOPINAE (NEUROPTERA: CHRYSOPIDAE) FROM COSTA RICA, WITH SELECTED TAXONOMIC NOTES AND A NEOTYPE DESIGNATION[1]

**Norman D. Penny**[2]

ABSTRACT: Three new species are described: *Chrysopodes (Neosuarius) crassipennis* from 3 km SE of Rio Naranjo, Guanacaste Province, Costa Rica; *Leucochrysa (Nodita) amistadensis* from Parque Nacional La Amistad, Puntarenas Province, Costa Rica; and *Leucochrysa (Nodita) ratcliffei* from Pandora, Limón Province, Costa Rica. The new name *Leucochrysa (Leucochrysa) adamsi* is proposed for the junior secondary homonym *Leucochrysa navasi* Banks, 1941 [nec. *Leucochrysa navasi* (Kimmins, 1940)]. A neotype is designated for a species of Costa Rican Chrysopinae – *Leucochrysa (Nodita) indiga*. Redescriptions are presented for *Leucochrysa (Nodita) indiga* and *Leucochrysa (Nodita) maculata.*

As part of a plan to inventory all plant and animal species of Costa Rica (Yoon, 1993), a project was undertaken to develop a monograph of the Neuroptera of this country. Intensive collection of Neuroptera in Costa Rica in recent years by many researchers and parataxonomists has yielded large numbers of chrysopine chrysopids. Among the collected specimens are three species which were previously unknown and are described below. Nomenclatural problems have been noted for several other species. *Leucochrysa (Nodita) navasi* Banks, 1941 is a junior homonym. The types of six chrysopid species described by Navás (1928) have been destroyed. In preparation for a monograph of the Chrysopidae of Costa Rica, a neotype is designated here for one of these species and two of them are redescribed.

**Materials and Methods:** The apical part of the abdomen of selected specimens was broken off with fine forceps and macerated in 10% KOH, stained in Chlorazol Black E, and preserved in a glycerin-filled microvial pinned beneath the rest of the specimen. Wing tracings were made with a microprojector from temporary wing mounts on microscope slides. Following illustration, wings were glued to cards pinned beneath the appropriate specimen. Body and genitalic drawings were made with the aid of dissecting or compound microscopes with camera lucida attachments. Morphological terminology follows Brooks and Barnard (1990).

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[1] Received March 9, 2000. Accepted May 22, 2000.

[2] Department of Entomology, California Academy of Sciences, San Francisco, CA 94118.

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## NEW SPECIES DESCRIPTIONS

### *Chrysopodes (Neosuarius) crassipennis* Penny, NEW SPECIES

(Figures 1-6)

**HOLOTYPE:** a male, "COSTA RICA: Guan., 3 km SE Rio Naranjo, 22-25 Jan 1993, F.D. Parker." Type deposited in Instituto de Biodiversidad (INBio), Santo Domingo de Heredia, Costa Rica. Type locality: 3 km SE of Rio Naranjo, Guanacaste Province, Costa Rica.
**Additional material examined**: (all paratypes): COSTA RICA: Guanacaste Province, 3 km SE Rio Naranjo, F.D. Parker, 39 males, 67 females; specimens collected in all months except October and November; 14 km S Cañas, F.D. Parker, 1 female collected in June. Paratypes deposited in collections of Utah State University (USU), California Academy of Sciences (CAS), INBio, Texas A. & M. University and U.S. National Museum of Natural History.

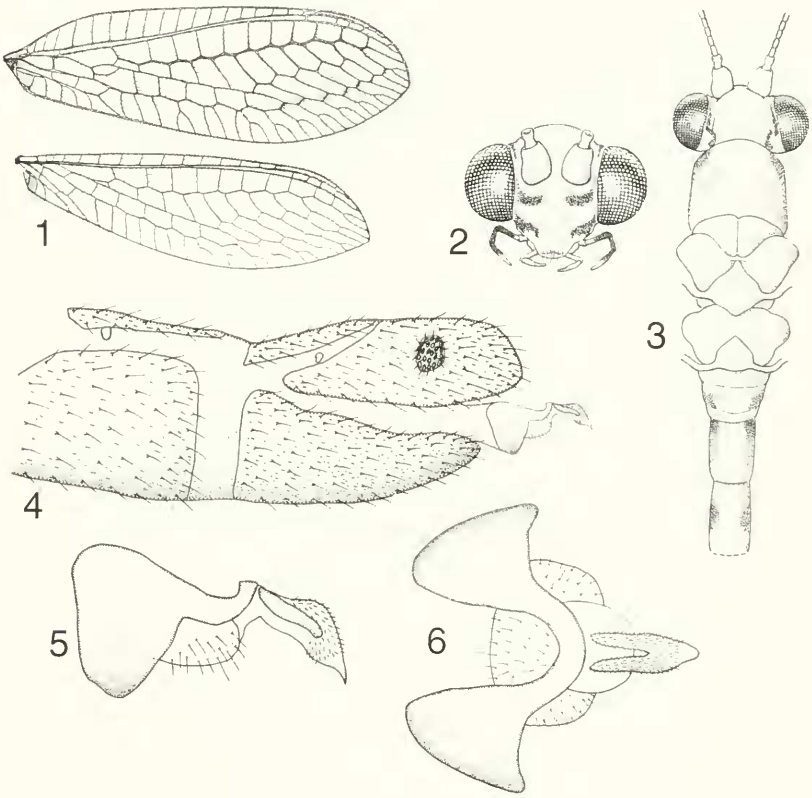
**Diagnosis:** The most distinctive feature of this species is the distinctly swollen (incrassate) radial sector vein of the male forewing. Incrassate wing veins are also found in *Chrysopodes (Neosuarius) crassinervis,* but this species lacks the red head markings of *C. (N.) crassipennis*. Another species which often has swollen wing veins is *Chrysopodes parishi* (Banks), but members of this species have pale maxillary palpi, divergent gradate series, and males with a massive gonarcus. *Chrysopodes (N.) crassinervis* has dark palpi, parallel gradate series, and relatively thin gonarcus medial arch.

*Chrysopodes (N.) crassipennis n.sp., Chrysopodes (N.) collaris* (Schneider) and *Chrysopodes (N.) divisa* (Walker) adults share a double red band on the frons which is interrupted medially . However, *C. collaris* adults are much more robust, (i.e., pronotum wider than long) with green rather than dark forewing crossveins. The head, wing, and male genitalia are very similar in *C. crassipennis and C. divisa*, but *C. crassipennis* lacks the two ventral projections of the dorsal apodeme of the male ectoproct, that are present in *C. divisa,* and males of both *C. divisa* and *C. collaris* lack incrassate forewing veins.

**Head:** Clypeus, labrum, labial palpi, and medial part of frons and vertex pale green. Maxillary palpi dark laterally; pale medially and at apex of terminal segment. Genae red. Additional red markings include two short parallel bands from gena and below antennal bases (Fig. 2), as well as along margins of compund eyes on vertex. Subantennal bands fuse medially in some individuals. Antennal scape, pedicel and flagellum entirely pale green. Mandibles asymmetrical with basal tooth on left mandible.
**Thorax:** Pronotum creamy yellow medially and pale green laterally, with red markings on vertex extended onto antero-lateral margins of pronotum (Fig. 3). Meso- and metanota pale green, without markings. Legs entirely pale green. Tarsal claw apically sharply bent at 90° and base quadrate. **Wings:** forewing length – 10.8 to 11.2 mm. Forewing (Fig. 1) with longitudinal veins pale green. Radial and gradate crossveins dark, with gradates darkly margined on membrane. Five to six inner and outer gradate crossveins in parallel series. Costal and m-cu crossveins pale in some individuals, dark in others. Radial sector of males strongly incrassate, while costal, radial and medial crossveins less so. Intramedian cell ovate. Wing membrane clear, without dark markings, except along margins of gradate veins. Hindwing veins entirely pale green without dark markings on membrane; apex pointed; five inner and outer gradate veins.

**Abdomen:** Pale green with rusty red coloration around spiracles and extending onto lateral margins of tergites. Male ectoprocts evenly rounded apically, extended slightly beyond apex of sternite 9; ventro-medial projection and dorsal apodeme of ectoproct absent (Fig. 4). Gonarcus strongly arched, with narrow medial portion and broad lateral arms (Fig. 6). Arcessus with microsetae, tapered to single, simple, medial point. Gonosaccus with gonosetal fields on either side of mid-line (Fig. 5), but not meeting medially.

**Name derivation:** The name refers to the swollen radial sector veins of the male forewing.




Figures 1-6. *Chrysopodes (Neosuarius) crassipennis.* Fig. 1. Fore and hindwings; Fig. 2. Head in frontal view; Fig. 3, head, thorax, and anterior abdomen in dorsal view; Fig. 4, apex of male abdomen in lateral view; Fig. 5, male genitalia in lateral view; Fig. 6, male genitalia in dorsal view.

## *Leucochrysa (Nodita) amistadensis* Penny, NEW SPECIES

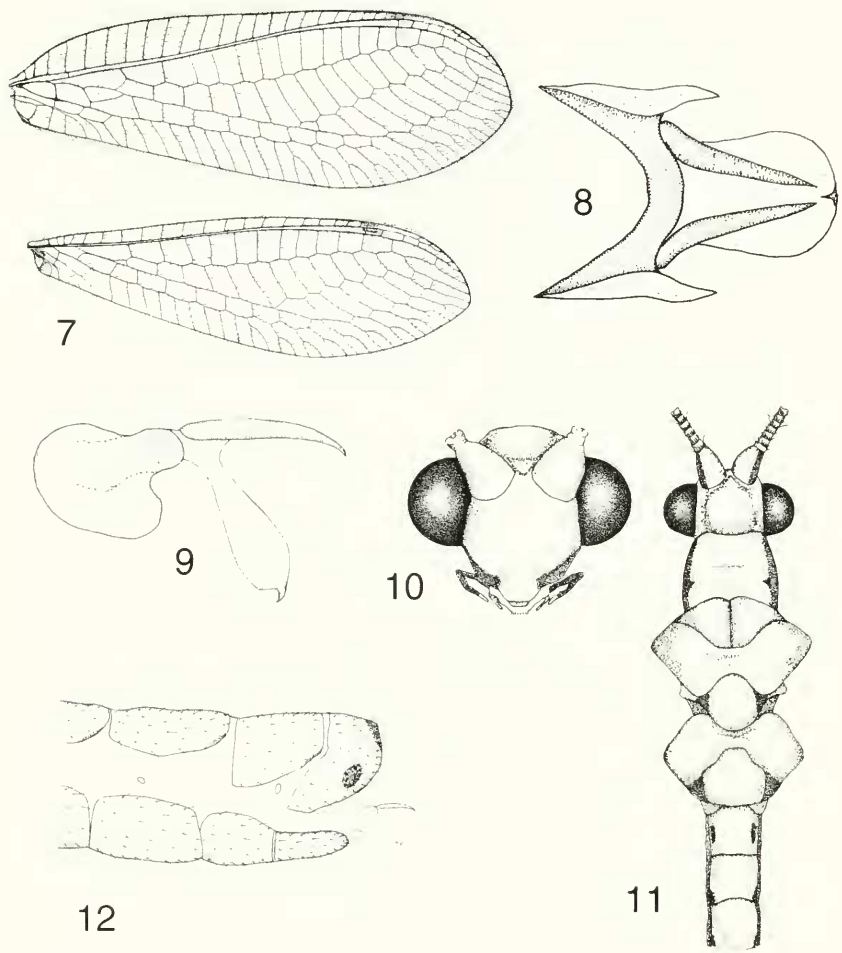
(Figures 7-12)

**HOLOTYPE**, a male, deposited in INBio, labelled: "COSTA RICA: Puntarenas, La Amistad Nat. Park, 08°57'N, 82°50'W, 28 Feb. 1991, 1500 m, Norman D. Penny." Type locality: Parque Nacional La Amistad, Puntarenas Province, Costa Rica.
**Additional Material Examined:** one male (paratype): COSTA RICA, Puntarenas Province, Parque Nacional La Amistad (08°58'N, 82°50'W), 21 February 1991, 1600 m, N.D. Penny (CAS).

**Diagnosis:** This species belongs to a group having the following suite of characteristics: gena red, but frons pale green, without transverse band linking the genal marks; maxillary palpi dark laterally; antennae pale, with reddish-brown lateral scape stripe; pronotum with lateral red stripe; hindwing pale apically; male gonarcus with broad lateral arms and a pair of elongate parasagittal gonocornu. Adults of *Leucochrysa (Nodita) amistadensis* differ from those of the closely related *L. (N.) caucella* Banks in lacking spots on the mesoscutum. Adults of both species have the meso- and metascutella dark laterally.

**Head:** Frons, labrum, clypeus, labial palps and vertex pale green. Genae and maxillary palpi dark reddish-brown (Fig. 10). Antennae pale green, with a dark reddish-brown, lateral stripe on scape and pedicel.
**Thorax:** Pronotum pale green with narrow, dark reddish-brown stripe wider at mid-length (Fig. 11). Meso- and metanota pale green with small dark spots laterally on meso- and metascutella. Pleural areas white. **Forewing:** (Fig. 7) length = 14.3 mm to 17.0 mm (holotype 14.3 mm). Longitudinal and crossveins pale green, except apex of costal crossveins, origin of radial sector, basal radial crossveins, gradate crossveins, pterostigma and apical twiggings dark. Nine inner gradates not extended far basally, eight outer gradates, with one or two extra gradates of an intermediate series in some individuals. **Hindwing** pale green, except for dark pterostigma. Wing apex rounded, not darkened.
**Abdomen:** pale green, with segmental dark markings; tergite 2 with dark reddish-brown lateral stripe; tergites 3 to 9 with dark reddish-brown mark at postero-lateral corner; apex of ectoproct with dark reddish-brown mark (Fig. 12). Male gonarcus with thin, rounded lateral arms (Fig. 9); gonocornu as long as gonarcus, only slightly arched apically and convergent apicomedially (Fig. 8); mediuncus a single medial point with ventral, elongate narrow gonosaccus.

**Name Derivation:** The name refers to the national park in southern Costa Rica where the type series was collected.




Figures 7-12. *Leucochrysa (Nodita) amistadensis.* Fig. 7, Fore and hindwings; Fig. 8, male genitalia in dorsal view; Fig. 9, male genitalia in lateral view; Fig. 10, head in frontal view; Fig. 11, head, thorax and anterior abdomen in dorsal view; Fig. 12, apex of male abdomen in lateral view.

## *Leucochrysa (Nodita) ratcliffei* Penny, NEW SPECIES

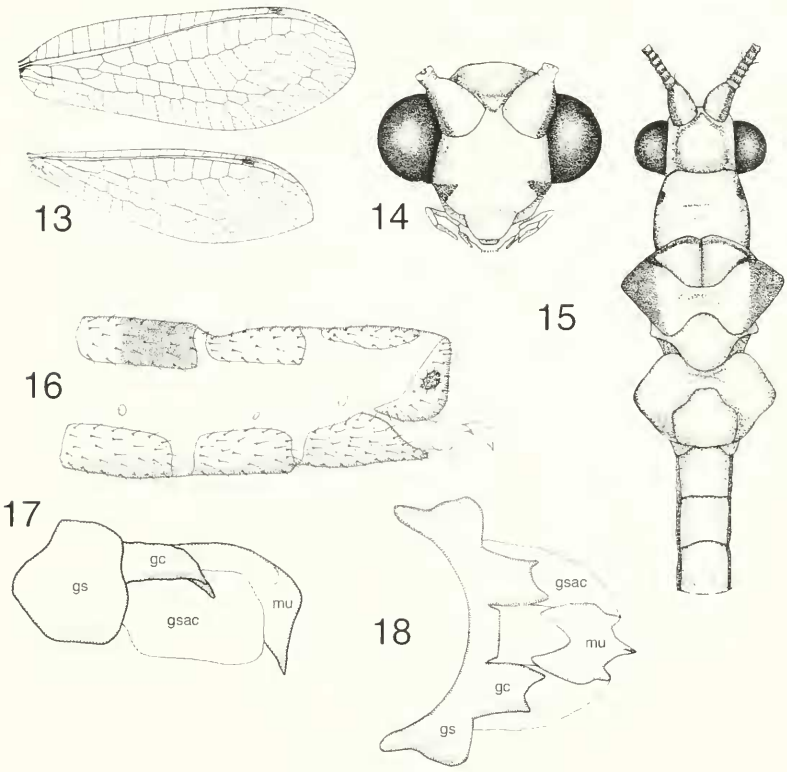
(Figures 13-18)

**HOLOTYPE**, a male deposited in INBio, labelled: "COSTA RICA: Limón, Pandora, 24 Sept. 1990, Norman D. Penny." Type locality: Pandora, Limón Province, Costa Rica.
**Additional Material Examined:** 1 male, 2 females (CAS) (all paratypes): same data as holotype.

**Diagnosis:** Adults of this species, *Leucochrysa (Nodita) lenora* (Banks) and *Leucochrysa (Nodita) maculata* (Navás) share a chevron-shaped dark mark behind the antennal bases, red dorsal stripe on antennal scape, pale antennae, pale palpi and dark markings on the frons. However, *L. (N.) ratcliffei* adults are not darkened along the first few flagellar segments and markings of the frons below the antennae are reduced to two reddish-brown spots near the eyes and not medially continuous, as in the other two species. Additionally, *L (N.) maculata* adults have darkened basal segments of the antennal flagellum. Males of *L. (N.) forcipata* Penny and *L. (N.) ratcliffei* are similar in having a stout, two-pronged gonocornu on either side of the gonarcus of the genitalia. However, the cleft between the prongs is much deeper in *L. (N.) forcipata* males and the mediuncus is much more elongate. Non-genitalic differences include no stripe on the scape and no dark genal mark and spots on the mesoscutum in *L. (N.) forcipata.*

**Head:** Frons, gena, labrum, clypeus, and palpi pale yellow; reddish-brown spot on either side of frons above gena and below antennal base (Fig. 14). Vertex green, rugose; bearing chevron-shaped reddish-brown mark behind antennal bases in some individuals. Antennal scape pale yellow ventrally (reddish at base in some individuals) and pale yellow dorsally with reddish-brown longitudinal stripe at dorso-lateral margin or over entire dorsal surface at apex of scape; pedicel and flagellomeres pale green, without markings; flagellum longer than forewing length. **Thorax:** Pronotum pale green with small reddish-brown spot at anterolateral margin (Fig. 15). Mesoscutum green medially and reddish-brown laterally; reddish-brown markings contiguous as arc at anterior margin of scutum in some individuals. Meso- and metascutella and metascutum green, without markings. **Forewing:** (Fig. 13) length – 11.6 to 13.0 mm. Longitudinal veins pale green; costal and radial crossveins dark at vein intersections; gradates and medial crossveins (to last inner gradate in some individuals), apical medial crossvein, some apical forks, and pterostigma dark. Five to six inner gradates, five to six outer gradates not parallel. **Hindwing:** pale green without dark markings, except anterior part of pterostigma dark brown; wing apex pointed, pale. Legs pale green. Tarsal claw with sharply broadened base with seta at apex of basal flange.
**Abdomen:** Pale green, with tergites 3 and 7 covered by reddish-brown spots. Male ectoproct extended slightly beyond sternite 9 (Fig. 16); sternite 9 with microtholi. Dorsal apodeme very weakly developed. Gonarcus broad, weakly arched; with broad lateral arms. Gonocornu each apically two-pronged (Fig. 18) with shallow indentation between them. Mediuncus short, tripartite, with rugose area lateral to non-decurved, apical point (Fig. 17).

**Name Derivation:** This species is named for Dr. Brett C. Ratcliffe, a scarab specialist from the University of Nebraska. He not only has shown an interest in Neuroptera systematics over a 25 year period and gone out of his way to collect chrysopids while light trapping on field trips, but organized the field trip which allowed the author to collect the type series of this species.




Figures 13-18. *Leucochrysa (Nodita) ratcliffei.* Fig. 13, Fore and hindwings; Fig. 14, head in frontal view; Fig. 15, head, thorax, and anterior abdomen in dorsal view; Fig. 16, apex of male abdomen in lateral view; Fig. 17, male genitalia in lateral view; Fig. 18, male genitalia in dorsal view. gc = gonocornu, gs = gonarcus, gsac = gonosaccus, mu = mediuncus.

***Leucochrysa (Leucochrysa) adamsi*** Penny, NOM. NOV.

I propose the new replacement name *(nomen novum) Leucochrysa (Leucochrysa) adamsi* for the preoccupied name *Leucochrysa (Leucochrysa) navasi* Banks, 1941 (itself a replacement name for *Leucochrysa antennata* Navás, 1921 [from Cuba], nec. *Leucochrysa antennata* Banks, 1905 [from Mexico]), which is a junior secondary homonym of *Leucochrysa (Nodita) navasi* (Kimmins, 1940) (*Nodita navasi* Kimmins being a replacement name for *Leucochrysa alternata* Navás, 1914 [from Costa Rica], nec. *Leucochrysa alternata* Navás, 1913 [from Mexico]). The new name is dedicated to Phillip A. Adams, the recently deceased expert on Neotropical chrysopids.

## TAXONOMIC NOTES AND NEOTYPE DESIGNATION

Navás (1928) described six new species of Chrysopidae from Costa Rica: *Ancylochrysa nevermanni, Chrysopa binaria, Meleoma titschacki, Nodita indiga, Nodita maculata* and *Nodita nevermanni.* The types of all of these species were destroyed in the World War II bombing of the Hamburg Museum in July of 1943. Tauber (1969) designated a neotype for *Meleoma titschacki* and Adams (1982) for *Chrysopa binaria.*

### *Chrysopodes (Chrysopodes) nevermanni* (Navás)

Navás (1928) described the genus *Ancylochrysa* for a new species (*nevermanni)* from Costa Rica. Adams and Penny (1987) synonymized *Ancylochrysa* with *Chrysopodes (Chrysopodes).* Navás' original description was very brief, but the species (and genus) were differentiated from other related species by the sinuous curves of the costal crossveins and the inner gradate series. Navás' drawing (1928, Fig. 15) of the forewing shows two additional distinctive characters: a quadrate intramedian cell and the first outer gradate vein lying at nearly a right angle to the pseudomedius vein (the latter trait being a defining characteristic of the tribe Chrysopini). Within the tribe Chrysopini in Central America only *Chrysopodes* has a broad costal area with sinuous crossveins. Only two species of *Chrysopodes* with a quadrate intramedian vein has been collected in Costa Rica. One species, from Guanacaste Province, has extensive reddish-brown markings on frons and vertex, and straight, parallel rows of gradate crossveins. The second species, has completely pale frons and vertex, as well as completely pale antennae, and the forewing gradate series are arched and not parallel. The second species fits the brief original description of *Chrysopodes nevermanni* much closer, and, not surprisingly, the only two additional known specimens of *Chrysopodes nevermanni* were both collected in Limón Province, about 90 km southeast of the type locality. Because Navás' (1928) original description does appear to describe the second species better, and because presently only females of this species are available, I have chosen to not designate a neotype for *Chrysopodes nevermanni* at this time.

### *Ceraeochrysa arioles* (Banks)

The name *Chrysopa binaria* was first proposed by Navás (1923) for a species from Argentina, which today is considered a valid species in the genus *Ungla.* Navás used the name *Chrysopa binaria* again in 1928 in describing a species from Costa Rica. Banks (1944), recognizing the resulting homonymy, proposed the new name *Chrysopa arioles.* In 1945, Banks declared *Chrysopa arioles* the replacement name for *C. binaria* Navás (1928) for a second time.

The description of *Chrysopa binaria* Navás (1928) includes an illustration of the head and pronotum in dorsal view. Clearly visible are two dark

stripes on the dorsal surface of the scape. Also illustrated are thin, dark lateral stripes on the pronotum. The type locality is "San José de Costa Rica." There are three known species of *Ceraeochrysa* from this region which can have this distinctive double scape stripe and dark lateral pronotal stripe: *Ceraeochrysa arioles, cincta,* and *claveri. Ceraeochrysa claveri* has a dark antenna flagellum while the other two species have pale antennae. Unfortunately, the coloration of the antennal flagellum is not mentioned in the original description nor shown in the drawing. Other characters mentioned in the original description are not adequate to differentiate the species.

Adams (1982) chose to follow Banks' (1944, 1945) interpretation of the species by selecting one of Banks' specimens as explicit neotype. It is from "Vergel, Chiapas/13-V-35/light, "Mexico, A. Dampf".

### *Leucochrysa (Nodita) indiga* Navás

(Figures 19-24)

**NEOTYPE,** here designated, a male deposited in INBio, labelled: "COSTA RICA: Ala, 20 km S Upsala, 12 Feb 1991, F.D. Parker." Type locality: 20 kilometers south of Upsala, Alajuela Province, Costa Rica.

**Additional Material Examined**: same data as neotype, except 28 October 1990, (1 female, INBIO); same data as neotype, except 29 January 1991, (1 male, CAS); 25 December 1990, (1 male, USU); 5 February 1991, (1 female, USU).

**Diagnosis:** The combination of characteristics of prontoum with lateral stripe expanded at mid-length, maxillary palpi dark, and hindwing with darkened apex places this species close to *Leucochrysa (Nodita) apicata, L. (N.) askanes,* and *L. (N.) postica.* Among these four species several other character states also are shared and the species are clearly closely related. However, *Leucochrysa (Nodita) indiga* can be easily separated from these related species by the male genitalia lacking the dorsal horn of the gonarcus and small, unipartite arcessus. Eidonomic characteristics which may be used with great caution are the lack of dark markings on abdominal tergite 3, and lack of dark margining of the forewing inner gradate veins.

**Redescription:**

**Head:** Frons white dorsally with reddish-brown transverse band ventrally from gena to gena (Fig. 20). Gena reddish-brown. Clypeus and labrum pale yellow. Maxillary palpi black, except apical 1/3 of apical segment pale. Labial palpi pale yellow. Vertex pale green, except small reddish-brown spot behind each antenna. Antennae pale yellow, except dorsal surface of scape reddish-brown; pedicel and first flagellar segment black; flagellum longer than forewing.

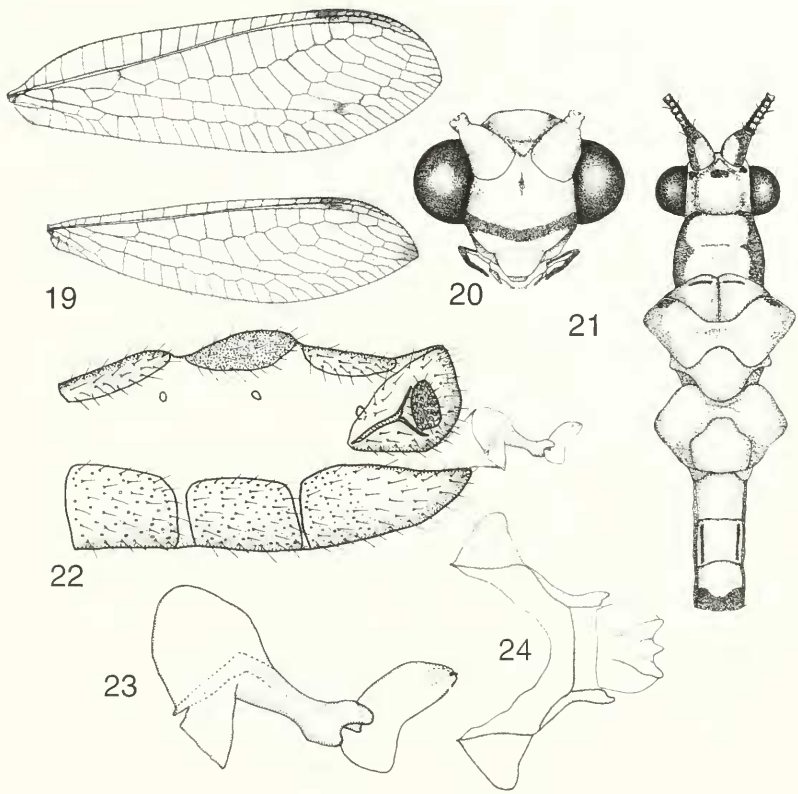
**Thorax:** Pronotum green with lateral, longitudinal reddish-brown stripe widened at mid-length (Fig. 21). Meso- and metanota pale green with thin reddish-brown transverse mark at anterior margin of mesonotum and also on mesoscutum at base of mesothoracic wings in some individuals. Pleural areas pale yellow, without markings but with numerous microtrichiae.

**Wings:** Forewing length 13.5 – 14.0 mm. Longitudinal veins pale green; crossveins dark, except in discal area pale. Basal half of pterostigma heavily darkened. Wing membrane infuscated at origin of radial sector, in apical 1/3 of radial sector and along outer gradate veins. Six inner

gradates and seven outer gradate veins. Costal and anal margins at wing base darkened. Hindwing veins pale green, except basal half of pterostigma, apical 1/3 of radial sector and apical forks along anal margin dark. Wing with apex pointed and darkened (Fig. 19).
**Abdomen:** Pale green with quadrate dark marks on tergites 4 and 7 (Fig. 22). Ectoproct apically rounded, without lobes; dorsal apodeme apically branched, extended to callus cerci. Male gonarcus broad, only slightly arched, with broad, ovate lateral arms (Fig. 23); inner margin of lateral arms formed as a caudo-laterally directed ridge. Arcessus proportionately very small, formed as a single medial point from triangular base (Fig. 24). Dorsal horns and endoprocesses absent. Gonosaccus without gonosetae or gonocristae.

**Notes:** The original description of *Nodita indiga* Navás, 1928 provided few characters that are useful for identification. However, one distinctive characteristic shown on the illustration accompanying the description is a lateral pronotal stripe, which is wider in the posterior half (Fig. 21). There are several closely related Costa Rican species with this characteristic pronotal stripe: *Leucochrysa (N.) amistadensis* n. sp., *Leucochrysa (N.) askanes* (Banks, 1946), *Leucochrysa (N.) caucella* Banks (1910), *Leucochrysa (N.) postica* (Navás, 1913) and one unnamed species. Of these, *Leucochrysa (N.) amistadensis* and *N. caucella* lack the mesonotal dark markings and the dark first three flagellar segments and have more gradate crossveins than mentioned in Navás' original description. The other three species appear to form a compact group sharing the following characteristics, some of which were noted by Navás (1928): dark maxillary palpi, a dark transverse band on the frons from gena to gena (Fig. 20), dark first three antennal flagellomeres, antennal scape with a dark dorso-lateral stripe and reddish suffusion over most of the rest of the dorsal surface, a distinctive lateral pronotal stripe that is expanded caudally, a dark arc on the anterior and lateral part of the mesonotum, forewing costa dark at its base, a dark region of longitudinal and crossveins in the apical 1/3 of the radius; much dark margining of membranes along crossveins and apical forks, about six inner gradate crossveins (Fig. 19), dark tip to the hindwing, and dark spots on abdominal tergites 4 and 7 (Fig. 22).

These three species have different male genital armature (Figs. 23, 24), but few eidonomic characters. Navás' original illustration includes a small dark spot on the vertex. This spot can be seen in many specimens of *Leucochrysa (N.) askanes* and the unnamed species, but not in *Leucochrysa (N.) postica. Leucochrysa (N.) postica* also has heavy margining of the inner gradate series, which is much reduced in or absent from the other two species, and not mentioned by Navás. Hence, the name *Leucochrysa (N.) indiga* could apply equally well to either *Leucochrysa (N.) askanes* or the undescribed species. Rather than add a new name to the literature, I prefer to conserve the names *Leucochrysa (N.) indiga* and *Leucochrysa (N.) askanes* by selecting a specimen of the undescribed species as neotype of *Leucochrysa (N.) indiga.* The locality at which this neotype was collected is approximately 180 km northwest of the original type locality (ICZN Article 75.3.6).




Figures 19-24. *Leucochrysa (Nodita) indiga.* Fig. 19, Fore and hindwings; Fig. 20, head in frontal view; Fig. 21, head, thorax and anterior abdomen in dorsal view; Fig. 22, apex of male abdomen in lateral view; Fig. 23, male genitalia in lateral view; Fig. 24, male genitalia in dorsal view.

### *Leucochrysa (Nodita) maculata* (Navás, 1928)

(Figures 25-30)

Navás' (1928) original description and illustration addressed some of the features of *Leucochrysa (N.) maculata* adults. Frons with a dark transverse band below the antennal bases; palpi pale; antennal scape with a dark line on the lateral surface, first five flagellar segments dark on the mesal surface, remainder of the flagellum pale; a v-shaped mark on the vertex; a thin, dark line laterally on the pronotum; and dark spots on abdominal segments 4, 6, 7, and 8. Although the original description and illustration are woefully inadequate

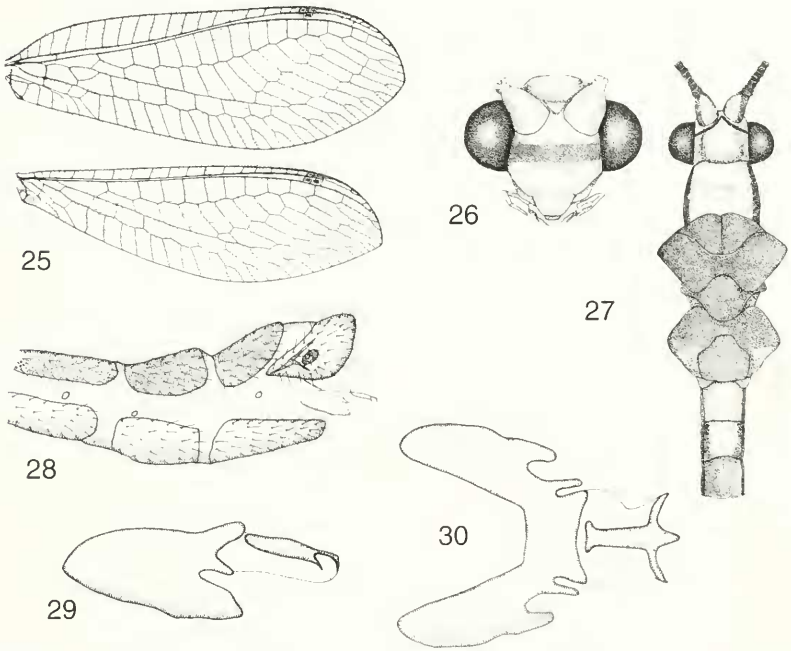
to identify this species in many respects, a neotype is probably not needed. Few species of *Leucochrysa (Nodita)* have a complete dark band across the frons and the dark stripe extending the length of the pronotum will distinguish *Leucochrysa (Nodita) maculata* from the closely related *Leucochrysa (Nodita) lenora.* However, a redescription is presented here.

**Redescription:** Based on 1 male, 2 females deposited in CAS.
**Head:** Frons pale yellow with transverse reddish-brown band between compound eyes below antennal bases (Fig 26). Clypeus, labrum and palpi pale yellow. Vertex pale green with reddish-brown V-shaped mark posterior to antennal bases. Antennal scape pale green with lateral reddish-brown longitudinal stripe; scape and first 5-10 flagellomeres dark brown, shaded to pale green on apical segments; about 86 flagellomeres, each with four whirls of dark setae.
**Thorax:** Pronotum pale green with longitudinal lateral reddish-brown stripe (Fig. 27). Meso- and metanotum mottled brown and green to completely dark brown in mature individuals, but metascutellum dark brown in all individuals. Pleural area creamy yellow to white.
**Legs**: Pale green; tarsi golden yellow; tarsal claws dark brown; tarsal claws abruptly broadened basally.
**Wings**: Forewing length 14.0-16.0 mm. Forewing membrane without markings, except proximal part of pterostigma dark. All longitudinal veins green; gradate, radial and cubital crossveins dark, all others pale green. Six inner and six to eight outer gradate crossveins (Fig. 25). Hindwing pale green, without markings, including apex of wing. Six inner and six outer gradate crossveins.
**Abdomen:** Pale green with sparse long pale setae and large reddish-brown spots on tergites 4, 6, 7 and 8 (Fig. 28). Eighth sternum with microtholi. Male ectoproct extended slightly beyond sternite 9. Dorsal apodeme of ectoproct branched around anterior margin of callus cerci. Male gonarcus broad, only slightly arched, with broad lateral arms (Fig. 29). Arcessus apically tripartite with no declination of medial prong (Fig. 30). Gonosaccus without gonosetae or gonocristae.

**Remarks:** The combination of character states of pale palpi, transverse dark band on frons, pale antennal flagellum which is dark basally; dorsal dark scape stripe and chevron-shaped dark marking on vertex behind antennae all ally this species to *Leucochrysa (Nodita) lenora* (Banks, 1944). However, *Leucochrysa (N.) lenora* has extensive dark margining of wing crossveins and the lateral pronotal mark is restricted to a short red spot, while *L. maculata* has no margining of wing crossveins and the lateral pronotal mark is a more elongate brown stripe.

***Leucochrysa (Nodita) palliceps*** (McLachlan, 1867)
= ***Leucochrysa (Nodita) nevermanni*** Navás, 1928, NEW SYNONYMY

The description and illustration of *Nodita nevermanni* leave little doubt that this is a synonym of *Leucochrysa (N.) palliceps* (McLachlan, 1867). The combination of entirely dark frons, completely pale pronotum, and extensive pigmentation of crossveins below the pterostigma will immediately identify individuals of this distinctive species. More problematical is its generic placement. The character states mentioned above are those often associated with *Gonzaga* Navás, 1913. A fourth characteristic of *Gonzaga* is a quadrate




Figures 25-30. *Leucochrysa (Nodita) maculata.* Fig. 25, Fore and hindwings; Fig. 26, head in frontal view; Fig. 27, head, thorax and anterior abdomen in dorsal view; Fig. 28, apex of male abdomen in lateral view; Fig. 29, male genitalia in lateral view; Fig. 30, male genitalia in dorsal view.

intramedian cell. Some specimens of *Leucochrysa (N.) palliceps* have an elongate triangular intramedian cell while in others this cell is quadrate. I have examined one specimen with left wings having a triangular and right wings having a quadrangular shape. However, in the vast majority of specimens the intramedian cell is triangular.

Brooks and Barnard (1990) used three additional male genitalic characteristics to help define *Gonzaga:* 1) males bear a ventral lobe of the ectoproct, 2) the arcessus is narrow, and 3) the arcessus is apically striated. This definition of *Gonzaga* describes the type species and several probable synonyms, but does not encompass all species now placed in the genus: for example, *Gonzaga nigriceps. Leucochrysa (Nodita) palliceps* seems to form a transition between *Nodita* Navás (1916) and *Gonzaga*, but the presence of a triangular intramedian cell in this species may indicate that *Gonzaga* does not form a monophyletic clade. Until a cladistic analysis can be done for the Leucochrysini it would seem more prudent to leave the species *palliceps* within the subgenus *Leucochrysa (Nodita).*

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